

## Claims

- [c1] 1. A positioning apparatus installed inside a printer for controlling a position of a first printer part, the positioning apparatus comprising:
- a motor for providing a rotational motion; and
- a Scotch yoke coupled to the motor for converting the rotational motion into a linear motion;
- wherein the position of the first printer part is controlled by the rotational motion of the motor via the linear motion of the Scotch yoke.
- [c2] 2. The positioning apparatus in claim 1 wherein the Scotch yoke comprises:
- a rotating part for accepting the rotational motion from the motor;
- a sliding part coupled to the rotating part for converting the rotational motion into a linear motion;
- a protrusion extending from the sliding part for placing the Scotch yoke in contact with the first printer part;
- wherein the rotational motion of the rotating part causes the sliding part to move in a back-and-forth linear motion which in turn causes the protrusion to be in-and-out of contact with the first printer part.

- [c3] 3.The positioning apparatus in claim 2 wherein the rotating part is a disc.
- [c4] 4.The positioning apparatus in claim 2 wherein the sliding part is an arm.
- [c5] 5.The positioning apparatus in claim 2 wherein the rotational motion of the motor is transferred to the rotating part of the Scotch yoke via a rod.
- [c6] 6.The positioning apparatus in claim 2 wherein the rotating part possesses a connecting protrusion and the sliding part possesses a connecting protrusion wherein the sliding part is coupled to the rotating part via a connecting protrusion extending from the rotating part into a vertical slit of the sliding part.
- [c7] 7.The positioning apparatus in claim 2 wherein the rotating part possesses a gap to indicate the position of the rotating part.
- [c8] 8.The positioning apparatus in claim 7 wherein the position of the rotating part is determined by using a detector to sense the gap located on the rotating part.
- [c9] 9.The positioning apparatus in claim 1 wherein the actions of the positioning apparatus can be divided into a first action and a second action.

- [c10] 10. The positioning apparatus in claim 9 wherein the first action is a pressing action and the second action is a non-pressing action.
- [c11] 11. The positioning apparatus in claim 1 wherein the first printer part can be a pinch, a platen, a reverse ribbon, a clutch, or a lifter.
- [c12] 12. The positioning apparatus in claim 1 further comprising a plurality of non-uniform contours disc 100 coupled to the motor, the plurality of non-uniform counters disc 100 having a non-uniform contour for controlling the position of a second printer part.
- [c13] 13. A positioning apparatus installed inside a printer for controlling a position of a first printer part, the positioning apparatus comprising:
  - a motor for providing a rotational motion; and
  - a Scotch yoke coupled to the motor for converting the rotational motion into a linear motion;

in which the Scotch yoke comprises:

  - a rotating part for accepting the rotational motion from the motor;
  - a sliding part coupled to the rotating part for converting the rotational motion into a linear motion;
  - a protrusion extending from the sliding part for placing

the Scotch yoke in contact with the first printer part; wherein the rotational motion of the rotating part causes the sliding part to move in a back-and-forth linear motion which in turn causes the protrusion to be in-and-out of contact with the first printer part; wherein the position of the first printer part is controlled by the rotational motion of the motor via the linear motion of the Scotch yoke.

- [c14] 14. The positioning apparatus in claim 13 wherein the rotating part is a disc.
- [c15] 15. The positioning apparatus in claim 13 wherein the sliding part is an arm.
- [c16] 16. The positioning apparatus in claim 13 wherein the rotational motion of the motor is transferred to the rotating part of the Scotch yoke via a rod.
- [c17] 17. The positioning apparatus in claim 13 wherein the rotating part possesses a connecting protrusion and the sliding part possesses a connecting protrusion wherein the sliding part is coupled to the rotating part via a connecting protrusion extending from the rotating part into a vertical slit of the sliding part.
- [c18] 18. The positioning apparatus in claim 13 wherein the rotating part possesses a gap to indicate the position of

the rotating part.

- [c19] 19. The positioning apparatus in claim 18 wherein the position of the rotating part is determined by using a detector to sense the gap located on the rotating part.
- [c20] 20. The positioning apparatus in claim 1 wherein the first printer part can be a pinch, a platen, a reverse ribbon, a clutch, or a lifter.